

$$\int \frac{x^3 - 3x^2 + x + 1}{4x^2} dx =$$

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$$= \frac{1}{4} \int x dx - \frac{3}{4} \int 1 dx + \frac{1}{4} \int \frac{1}{x} dx + \frac{1}{4} \int x^{-2} dx$$

$$= \frac{1}{4} \cdot \frac{1}{2} x^2 - \frac{3}{4} x + \frac{1}{4} \ln|x| + \frac{1}{4} \frac{1}{-2+1} x^{-2+1} + k$$

$$= \boxed{\frac{1}{8} x^2 - \frac{3}{4} x + \frac{1}{4} \ln|x| - \frac{1}{4} \frac{1}{x} + k}$$